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# Attracting Audiences to Science News: Ethical and Moral Considerations

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# Attracting Audiences to Science News: Ethical and Moral Considerations

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**ABSTRACT:** This paper considers ethical and moral aspects of the ways in which consumers are solicited to attend to a science news story. Science news values and the use of sensational headlines and images are considered in the context of evolutionary ethics and moral psychology.

**KEYWORDS:** attention, emotion, evolutionary ethics, moral psychology, news values, online news, science journalism, sensationalism

## 1. INTRODUCTION

This paper builds a case that crucial ethical aspects of techniques used to attract audiences to science news have been largely overlooked by scholars and insufficiently addressed in professional communities. Recent research has begun to foreground the ethical aspects of communicating science to non-expert audiences. For example, Dahlstrom and Ho (2012) discuss the use of narrative in science news, noting how this widely-used technique may at times be inherently misleading. This paper looks at the initial stage of science news consumption, the stage in which the non-expert audience member is solicited to attend to science news.

To attract audience attention, science news producers typically use headlines, story leads, and photographs or video thumbnails likely to trigger automatic, emotional audience responses. This is often done with the admirable goal of enticing readers or viewers to a story that encourages and supports sustained, effortful reasoning about scientific ideas or processes. However, even when this cognitive bait-and-switch approach works (although evidence suggests it seldom works), its widespread use raises ethical issues. What are the benefits, and for whom, of leading a consumer to a science story? What are the costs of using techniques associated with automatic, emotional cognition? There may be few viable alternative techniques available to science news producers who must compete for audience attention in a media environment in which traditional sources of science news vie with blogs, online news services, and niche television programming to attract audiences for science news. However, this fact makes urgent rather than obviates the need to explicitly consider ethical issues related to the selection and promotion of science news stories.

## 2. EVOLUTIONARY PERSPECTIVES, MORAL PSYCHOLOGY, AND COGNITIVE DUAL-PROCESSING MODELS

The arguments developed in this paper rely on evolutionary ethics and moral psychology, two rapidly growing areas of scholarship. It is beyond the scope of this paper to thoroughly review these two areas. For recent overviews of evolutionary ethics, see FitzPatrick (2011), James (2011), and Ruse (2010). For overviews of moral psychology, see Doris (2010) and Sinnott-Armstrong (2008). As Mesoudi and Danielson (2008) note, it is common to find evolutionary ethics and moral psychology synthesized in work that attempts to discern how evolutionary processes shape human morality. For example, Haidt (2007) has identified seemingly innate moral intuitions and connected these intuitions with the evolutionary processes that seem likely to have selected for our moral capacities. Moral intuitions regarding care and harm, Haidt (2007; see also Haidt, 2012) notes, likely exist because these intuitions are useful in maintaining cooperative social arrangements that seem a crucial factor in human evolution.

This merged evolutionary and moral psychological perspective accepts that human evolution favored low-effort, automatic cognitive processing of environmental stimuli. This view is informed by the many research programs that have shown that humans tend automatically to orient to, attend to, and initially process information. Perhaps best known among dual-process models is the “slow thinking” versus “fast thinking” model (Kahneman, 2011). In communication sciences, the distinction between central and peripheral processing is rather well known.

This merged perspective also accepts that emotion plays a large but heretofore under-examined role in human cognition. The human default setting is to respond to information emotionally rather than deliberatively. Of course, humans reason and deliberate. However, reasoning is relatively uncommon, likely because it is cognitively demanding. Even when we reason, reasoning is usually preceded by an emotional, automatic response to information. Prinz (2006) goes so far as to argue that moral judgments are purely emotional (albeit by no means entirely automatic). From this perspective, humans are unlikely to attend to a message unless it first engages their emotions.

Despite their emerging prominence in philosophy, psychology, and cognitive science, evolutionary ethics and moral psychology have rarely been applied in media scholarship. Tamborini (2011) applies moral foundations theory to explain audience responses to entertainment media. Elsewhere (Evans, in press), I apply evolutionary and moral psychology perspectives to television news. So far as I know, this paper is the first to apply evolutionary ethics and moral psychology to science news. As such, caution is warranted. This paper can only suggest rather than conclusively show that evolutionary and moral psychology perspectives can (1) integrate much of the seemingly disparate experimental evidence regarding science communication processes, and (2) provide a promising framework for understanding ethical aspects of science communication.

## 3. SOLICITING ATTENTION TO SCIENCE NEWS

In a sense, all attention is selective attention in that humans cannot attend to all stimuli available in either real-world or media environments. Human attention is limited in capacity. There are of course differences across individuals in terms of abilities to marshal and sustain attention (see Gruszka, Matthews, & Szymura, 2010). However, humans must necessarily

attend to media selectively. Human attention capacities seem relatively fixed while available media content increases rapidly and inexorably.

### 3.1 Science News Values

Journalists solicit audience attention by selecting and crafting stories that seem newsworthy, that is, stories that seem both important and likely to attract attention. Critics may claim that the latter concern too frequently trumps the former. In any case, scholars have long been keen to discern the values that account for journalists' story selections. *Negativity* seems a staple news value. Moreover, negativity is the sole news value that has been considered by media researchers explicitly in an evolutionary context. Shoemaker (1996) argues that humans have an innate preference for negative news, a preference explained by the advantages associated with identifying threats in one's environment. The "hardwired for negative news" hypothesis has received some limited empirical support (Grabe & Kamhawi, 2006; Kamhawi & Grabe, 2008; Wise, Eckler, Kononova, & Littau, 2009).

Like most types of news, science news frequently relies on negativity. Stories about the threats posed by nature to man, and by man to nature, are common. Health news frequently emphasizes the threats posed by illness, disease, toxins, and poor health-related behavior. In addition to negativity, science news relies on perhaps all of generic news values such as conflict, proximity, involvement of elite persons, and so forth. Badenscheier and Wormer (2012) set out to identify which if any news values may be distinctive to science news. They identify two news values that seem relatively more important in science news than in news about other topics: *astonishment* and *unexpectedness*. Astonishment and unexpectedness may seem related to *novelty*, a news value common to many types of news. Indeed, novelty is frequently defined in part as an unexpected or rare event (e.g., Bednarek & Caple, 2012, p. 43). In particular, there may be a great deal of overlap between novelty and unexpectedness. However, Badenscheier and Wormer (2012) prefer the term *unexpectedness*, presumably because a science news story is unexpected not so much because it is uncommon but because it seems implausible, at least initially.

Figure 1 shows a story posted on a blog affiliated with CNN, a story headlined "Can morality be changed magnetically?" The story concerns an experiment in which researchers altered participants' moral reasoning by applying transcranial magnetic stimulation. This story relies on the news value of unexpectedness, and perhaps some readers may be astonished to learn that something seemingly so complex and quintessentially human as moral reasoning can be affected by magnets. This story can be deemed an example of the "gee-whiz" science journalism that Jerome (1986) decries. It is also helpful to see the story as one that exploits the value of unexpectedness. By highlighting a surprising finding, the story can arouse readers. However, it is important that the finding not be so unexpected that the reader cannot comprehend the finding. One relevant insight from evolutionary perspectives on communication is the observation that humans readily most readily attend to moderately counter-intuitive ideas (Mesoudi, 2011). In this view, a story about a surprising but still comprehensible phenomenon is more likely to interest a reader than a story about a phenomenon so counter-intuitive that it cannot easily be fathomed. This suggests a limit on the ability of a science news story to exploit unexpectedness. Researchers might test the hypotheses that there are optimal and maximum levels of unexpectedness for science news stories.



Fig. 1. CNN Health blog, March 30, 2010.

Figure 2 shows a story posted on the blog io9, a story headlined “Superstorm: What the hell is happening on the Sun?” This story about unusually powerful solar flares prominently features an image provided by NASA’s Solar Dynamics Laboratory. Like many recent stories about space, this story takes advantage of high-resolution images and video. This story relies on astonishment, astonishment both at the solar activity and perhaps also at the availability of high-resolution video of the solar activity. The story uses superlatives and other lexical techniques to position the phenomenon as astonishing. “Hell” is invoked in the headline. The solar activity is a “superstorm,” the “most powerful of the year by a substantial margin,” a storm in which “each burst has been more violent than the last.” The solar flares are classified as X-class flares: “Long story short: X-class surges are biggies.” The story—especially if one avails oneself of the video—seems capable of triggering awe, which might be an emotion

frequently associated in science news with astonishment. Researchers might document the extent to which popular online videos related to science manifest the news value of astonishment and the extent to which astonishment seems a news value distinctive to online science news, as Badenscheier and Wormer (2012) suggest.



Fig. 2. io9.com, May 14, 2013.

### 3.2 Sensationalism and Science News Headlines

The role of emotion in science news is receiving some overdue attention from researchers. Griffin, Dunwoody, and Neuwrith (1999) offer a model in which affect is an important variable in the science communication process. This model has been applied (Griffin et al., 2008; Yang & Kahlor, 2013) to show how affect can predict (or at least moderate) information seeking and processing. Among researchers concerned with electronic media processes and effects, there is a renewed interest in sensationalism (e.g., Vettehen, Nuijten, & Peters, 2008), although few researchers have studied sensationalism specifically in science news.

Online news frequently employs tabloid-style language to attract attention. This seems especially true for popular news websites not associated with traditional news organizations, sites such as Huffington Post, Gawker, and BuzzFeed. For example, headlines for stories about public figures, both politicians and celebrities, commonly report that one public figure “blasts,” “rips,” or “tears apart” another. Commonly employed is the word “shock” (along with its permutations “shocks,” “shocked,” and “shocking”). Photographs (or video frames) show the person or persons involved, or in lieu of this, stock photographs of a person or persons. The photographs often show people manifesting emotion, although it should be noted that humans are likely innately disposed to see emotions in human faces (as well as in gestures and body positioning). That is, it requires little cognitive effort to read emotion off of a photograph, especially when a headline associated with the photograph primes the emotion to be seen.

Science news producers seem unable to resist the temptation to use sensational headlines. For the five days immediately preceding the writing of this paragraph, May 14 through May 18, 2013, one can find published online many examples of sensational headlines in science news. Some stories with sensational headlines originate with media relations professionals. Media releases available from EurekAlert! (a service of the American Association for the Advancement of Science) during this five-day period include releases with the following headlines: “Frogs in California harbor deadly pathogen”; “New discovery of ancient diet shatters conventional ideas of how agriculture developed”; “Jekyll into Hyde: Breathing auto emissions turns HDL cholesterol from ‘good to ‘bad’”; “South Africa’s new radio telescope reveals giant outbursts from binary star system”; “Researchers say they are shocked by new statistics on head injuries among people who are homeless”; “World’s most extraordinary species mapped for the first time”; “Novel study reports marijuana users have better blood sugar control”; “Tiny water creepy crawlies from South Korea and the Russian Far East”; “Asian water beetles use biological weapons”; and “Clam fossils divulge secrets of ecologic stability.” Headlines published on Huffington Post during this five-day period include: “Giant Space Rock Headed Our Way”; “Lucky Teen Makes Incredible Viking Find”; “Male Bicep Size Linked to Political Views in Strange New Study”; “Songs, Colors Linked in Surprising New Study”; and “New Secrets of Zombie Worms Revealed.” These headlines tout novelty, newness, and surprise. They promise revelations of secrets. Topics covered include a deadly pathogen, a Jekyll-to-Hyde transformation, zombie worms, and a biological weapon. Some headlines promise shocking news or the shattering of conventional ideas.

Figure 3 shows a May 15, 2013 Huffington Post story “tease” headlined “Why Does Fear Cause Our Eyes to Widen?” The photograph that accompanies the headline, an extreme close-up image of a widened human eye, is a typical use of stock photography by websites and blogs that offer science news in that it depicts a person and an emotion. In this case, a story about an emotion, fear, includes the word “fear” in the headline and uses an image that, at least in conjunction with the headline, provides a vivid example of fear. This is emotional overkill of sorts. Even without explicitly naming an emotion and using a pointed visual exemplar, science news stories can readily arouse viewers.

## Why Does Fear Cause Our Eyes To Widen?



Comments (44) | Emotional Intelligence

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Fig. 3. Huffington Post story tease, May 15, 2013.

#### 4. CONCLUSION: WHAT, EXACTLY, IS WRONG WITH SENSATIONAL SCIENCE NEWS

Of course, science news producers have long targeted consumers by selecting emotionally arousing story topics and employing sensational headlines and images. However, these practices may be exacerbated by the need to drive user traffic to online news stories as consumers rely increasingly on social media and news-reader apps (e.g., Flipbook, Pulse, Zite) to monitor the news environment, a process that sees traditional science news outlets competing on an increasingly level playing field against science bloggers and science-centered news websites (e.g., io9). The rise to prominence of bloggers and websites (e.g., Citizens Climate Lobby, Committee for a Constructive Tomorrow (CFACT)) that call attention to science stories in service of an advocacy goal may also contribute to the circulation of arousing, sensational science news stories.

Critics have a *prima facie* case that sensational, tabloid-style science news is unlikely to improve the lives of news consumers or improve public discourse about science. However, science communication researchers will need to specify what if anything is wrong with



sensational science news. For this task, evolutionary perspectives on media can help by delineating why humans rely so heavily on media systems. For example, a compelling case can be made that our news media systems function to provide environment surveillance in a world too populated and too full of threats and opportunities to monitor without media (Evans, 2005). Evolutionary perspectives can also help us understand why we preferentially attend to certain media stimuli, and why we initially, and sometimes unrelentingly, process information using low-effort, automatic cognition. Evolutionary ethics can help us understand why we have the moral capacities we employ to make sense of the news. Moral psychology can help us see why our moral reasoning about the news is shaped by our evolutionary trajectory. These perspectives contribute to answering the fundamental “why?” questions that must be answered along the way toward developing an advanced theory of communication ethics.

It may be necessary that science communication exploit our innate, evolved inclinations. It may be necessary that science communication rely on emotion. Certainly, it is hard to imagine how science communication could thrive by contravening humans’ evolved cognitive capacities. What is required is not that we end sensationalism in science news, although there seems to be a recent escalation of sensationalism that cannot be sustained if only because there are only so many sensational words and phrases that can be crammed into a single headline. What is required is that science communicators explicitly acknowledge their reliance on our evolved cognitive infrastructure; work to better understand the implications of science communication in the context of human information needs in an increasingly complicated media environment; and aim to provide science news that arouses consumers about genuinely important developments in science. A consumer does not need the story “Can morality be changed magnetically?” any more than a consumer needs a breakfast cereal sweetened with high fructose corn syrup. Both will suffice in meeting a need (for food, in the latter case, for environmental surveillance in the former). Both exploit evolved preferences (one for sweet foods, the other for novelty). Evolutionary perspectives may help in determining what constitutes a genuinely important science story. Fortunately, given the broad scope and relatively steady progress of scientific inquiry, whatever criteria may emerge, it seems likely there will be more than enough genuinely important science stories to keep journalists occupied and consumers engaged.

The goal of this paper is to show that the initial stages of science news creation are relevant to ethical considerations regarding science communication. It would require a paper at least as long as the current paper to develop and support the view that evolutionary ethics and moral psychological perspectives are uniquely useful in making sense of science news values and the role of emotion in science news. Even though these perspectives are useful, other perspectives on ethics and information processing can illuminate this same territory. Similarly, although many researchers accept the evidence that moral intuitions shape human information processing, not all will agree that these intuitions have been selected by evolutionary processes. The most important task is to develop a model of science communication processes that not only includes ethical concerns but that actively foregrounds ethics. Such a model will make progress more likely. Indeed, science communication research may already have advanced almost as far as it can without such a model. Hand-wringing about news values that seem unworthy of professional science communicators and unhelpful for science news consumers must be supplanted by rigorous theory-building regarding the most appropriate role for science communication in human civilization.

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